

REMARKS:

Claims 3, 6-7, 11, 13-14, 23-34, 37-40, 44-45, 50, 53-55, 60-64, 75, 80, 96-98, 100, 116-124, 126-129, and 131-143 have been allowed.

Claim 73 is hereby amended in response to the objection thereto and claim 71 is canceled. As amended, claim 73 is believed to satisfy the requirements of 35 U.S.C. 112.

The Office Action indicates that claims 73, 77, 102-105, and 108-109 will be allowable if rewritten in independent form including all limitations of the base claim and any intervening claims and if claim 73 is amended in response to the objection thereto. As amended, independent claims 73, 77, and 102-105 are believed to be in condition for allowance. Applicants respectfully contend that claims 108-109 are in condition for allowance because claim 106 is patentable for the reasons set forth below.

Claim 22 stands rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent 6,912,008 (Mair), and claim 35 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Mair. Applicants contend that claims 22 and 35 are patentable for the following reasons.

Claim 22 recites a transmitter for use in data transmission over a TMDS-like link. The transmitter includes circuitry configured for generating an output signal in response to audio data and asserting the output signal to an output for transmission over a channel of the link. The output signal modulates DC disparity of the channel and is indicative of the audio data.

Mair discloses a binary data encoding method which is a modification of conventional TMDS-encoding, and which replaces some of the DC balancing bits of conventional TMDS code words with bits indicative of auxiliary (e.g., audio) data. Code word sequences generated in accordance with Mair's method do include DC balancing bits, and are DC balanced bit sequences. This is explicitly taught by Mair at col. 3, lines 6-19. Accordingly, Mair teaches away from modulating the DC disparity of a code word sequence and thus teaches away from the invention of claim 22. Mair neither teaches nor suggests circuitry (in a transmitter) configured for generating an output signal which modulates DC disparity of a channel of a TMDS-like link as recited in claim 22.

Claim 35 recites a transmitter for use in data transmission over a TMDS-like link. The transmitter includes circuitry configured for generating an output signal in response to auxiliary data and asserting the output signal to an output for transmission over a channel of the link. The output signal is indicative of a stream of binary data words that determine an analog auxiliary signal (as well as video data), where the analog auxiliary signal is indicative of the auxiliary data.

Mair teaches a binary data encoding method which is a modification of conventional TMDS-encoding, and which generates a stream of binary code word bits in response to binary data bits. The code word bits include DC balancing bits corresponding to (similar but not identical to) some of the DC balancing bits of a stream of conventional TMDS code words, and bits indicative of auxiliary (e.g., audio) data in place of some of the DC balancing bits of a stream of conventional TMDS code words. Mair's encoding method neither encodes an analog signal nor generates a stream of binary code word bits that determines an analog signal. Mair teaching does not pertain to generation of stream of binary data words that determine an analog auxiliary signal (as well as video data). Nor does Mair teach or suggest generating an output (by encoding a stream of video data bits and a stream of auxiliary data bits) that determines an analog auxiliary signal.

The output of Mair's encoding method is a DC balanced sequence of binary bits that can be decoded by binary data decoding circuitry to determine a sequence of video data bits and a sequence of auxiliary (e.g., audio) data bits. It cannot reasonably be contended that Mair's DC balanced binary bit sequence would inherently determine an analog auxiliary signal indicative of the auxiliary data bits that it encodes, as well as a sequence of video data bits, or that such a DC balanced binary bit sequence could be generated in such a manner as to determine an analog auxiliary (e.g., analog audio) signal indicative of the auxiliary data bits that it encodes as well as a sequence of video data bits. Nor can it reasonably be contended that "it would have been obvious" to one of ordinary skill in the art to modify Mair's teaching to reach the invention of claim 35.

The only rationale identified in the Office Action for modifying Mair's teaching to reach the invention of claim 35 is that to do so would eliminate the requirement for quantization and sampling of Mair's encoded signal (which is a DC balanced stream of binary code word bits). However, modifying Mair's teaching to reach the invention of claim 35 would not eliminate the requirement for quantizing and sampling Mair's encoded signal, unless the modification is performed in a manner contrary to Mair's teaching. Generation and transmission of a DC balanced bit sequence of binary code word bits in accordance with Mair's teaching (by encoding a stream of video data bits and a stream of auxiliary data bits) would, as a practical matter, require that the transmitted signal undergo sampling and quantization in order to perform binary data decoding on the resulting binary bit sequence. The binary data decoding would need to determine what DC balancing was performed on code bits during the encoding process, preliminary to identifying what auxiliary data are indicated by the transmitted code bits (e.g., by identifying which code word bits indicative of auxiliary data were inverted during encoding). It cannot reasonably be contended that a modified version of Mair's encoding process (performed on a stream of video data bits and a stream of auxiliary data bits) could generate a DC balanced, binary code word sequence that somehow determines an analog auxiliary signal (as well as video data), where the analog auxiliary signal is indicative of encoded auxiliary data without the need to sample and quantize said analog auxiliary signal. There is no teaching or suggestion determinable from art of record that such a modified version of Mair's encoding process should be performed or as to how to perform such a modified version of Mair's encoding process.

If one assumes for the sake of argument that the amplitude (as a function of time) of Mair's DC balanced binary bit sequence is (or determines) an analog signal, such an "analog" signal would need to undergo sampling and quantization in order to perform binary data decoding on the resulting binary bit sequence, in order then to determine what DC balancing was performed (during the encoding process) to generate the DC balanced binary bit sequence preliminary to identifying auxiliary data indicated by the "analog" signal (including by identifying which code word bits indicative of auxiliary data were inverted during encoding). Note that Mair expressly teaches (e.g., at col. 3, lines 15-20) an encoding method that inverts auxiliary data bits included in the encoded signal in order to achieve DC balancing. Thus, one of ordinary skill in the art familiar with Mair's teaching would not have

the rationale asserted in the Office Action for modifying Mair's teaching to reach the invention of claim 35. It would be contrary to Mair's teaching to eliminate the DC balancing that must be performed to generate Mair's DC balanced encoded signal (e.g., to eliminate the requirement for sampling and quantizing Mair's encoded signal to enable determination of what DC balancing, including what inversion of auxiliary data bits, was performed to generate the encoded signal). Decoding of Mair's DC balanced encoded signal would as a practical matter require sampling and quantization as well as binary data decoding on the resulting binary bits, and selective inverting of those of the resulting binary bits indicative of auxiliary data (i.e., selective inverting of those of the bits indicative of auxiliary data that were inverted during encoding to achieve DC balancing).

Mair fails to teach or suggest including, in a transmitter, circuitry configured for generating (in response to auxiliary data) an output signal indicative of a stream of binary data words that determine an analog auxiliary signal (as well as video data), where the analog auxiliary signal is indicative of the auxiliary data as recited in claim 35. Rather, as explained above, Mair teaches away from the invention of claim 35 by teaching the encoding both a stream of video data bits and a stream of auxiliary data bits as a DC balanced binary code bit sequence.

Claims 67, 71, 76, 78, 101, 106-107, and 110-111 stand rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Application Publication No. 2002/0163598 (Pasqualino). In response, claims 67, 71, 76, 78, 101, and 111 are hereby canceled, and Applicants contend that claims 106-107 and 110 as hereby amended are patentable for the following reasons.

Claims 106 and 110 pertain to transmission of video and auxiliary data during periods (separated by blanking intervals) having specific durations, rather than during blanking intervals.

Claim 106 recites a communication system, including a TMDS-like communication link (comprising at least one video channel) between a transmitter and a receiver. The transmitter is configured to transmit video data and auxiliary data to the receiver over the link during data transmission periods separated by blanking intervals. The data transmission

periods include first periods each having duration within a first range and second periods each having duration within a second range distinct from the first range. The transmitter is configured to transmit the video data to the receiver over the video channel only during the first periods and to transmit auxiliary data to the receiver over the video channel only during the second periods. The receiver is configured to recognize each of the second periods and operate in an auxiliary data reception mode during each of the second periods, and to recognize each of the first periods and operate in a video data reception mode during each of the first periods.

Claim 110 recites a transmitter including circuitry configured to assert a signal indicative of video data and auxiliary data during data transmission periods separated by blanking intervals. The data transmission periods include first periods each having duration within a first range and second periods each having duration within a second range distinct from the first range. The signal is indicative of the video data only during the first periods and is indicative of the auxiliary data only during the second periods.

Pasqualino fails to teach or suggest asserting or transmitting video data only during periods (separated by blanking intervals) each having duration within a first range, and asserting or transmitting auxiliary data only during other periods (also separated by blanking intervals) each having duration within a second range distinct from the first range. Pasqualino neither teaches nor suggests that any of its periods for “Audio Transport” (as shown in Pasqualino’s Fig. 7) must have (or desirably have) duration in a range that is distinct from the duration of any of the periods (active video periods) during which a transmitter transmits video data. The Office Action correctly asserts that Pasqualino teaches (with reference to Fig. 7) transmission of video data when control signals DE and A_DE are high. Pasqualino also teaches (with reference to Fig. 7) transmission of auxiliary (audio) data when control signal DE is low and control signal A_DE is high. However, Pasqualino neither teaches nor suggests that transmission of video data (i.e., transmission of a signal indicative of video data) should only occur during first periods (each having duration within a first range) and transmission of auxiliary data should only occur during second periods (each having duration within a second range distinct from the first range). During the periods in which Pasqualino transmits auxiliary data (e.g., the “Period for Audio Transport” of Fig. 7), Pasqualino also

transmits a line header (e.g., the “LineHdr” of Fig. 7 or line header 540 of Fig. 5). The cited teaching of Pasqualino to transmit 24 bit words of video data and 16 bit words of audio data is irrelevant to the issue as to whether Pasqualino teaches transmission of video data only during periods each having duration within a first range and transmission of auxiliary data only during periods each having duration within a second range distinct from the first range), especially since Pasqualino teaches transmission of a line header during each period in which it transmits auxiliary data.

Thus, claim 106 (and each claim depending directly or indirectly therefrom) and claim 110 is patentable over Pasqualino.

Applicant respectfully contends that reasons for allowance of all the claims that have been allowed are apparent from the prosecution history and claim language, and does not agree with all stated reasons for allowance of these claims set forth in the Office Action.

It is respectfully submitted that all uncanceled ones of the pending claims, as hereby amended, are in condition for allowance.

Respectfully submitted,

GIRARD & EQUITZ LLP

Dated: 7/01/08

By: /Alfred A. Equitz/

Alfred A. Equitz

Reg. No. 30,922

Attorneys for Applicant(s)

Attorney Docket No. SII-300 [SIMG0077]